PREFACE

The editors of the Annals of Mathematical Logic have kindly consented to devote this entire issue to four papers on α-recursion theory. All four papers are concerned with the problem of lifting finite injury arguments (invented by Friedberg and Muchnik to solve Post's problem) from ω to an arbitrary Σ_1 admissible α. The lifting is accomplished by mixing recursion theoretic ideas with model theoretic notions first devised by Gödel in the course of proving $V = L \rightarrow GCH$.

The Sacks–Simpson paper solves Post's problem for every Σ_1 admissible α, and with the help of a genericity concept develops what appears to be the strongest possible solution. The Lerman paper determines all Σ_1 sentences true in the partial ordering of α-recursively enumerable degrees. The Shore paper constructs a minimal α-degree for every Σ_2 admissible α. And the Lerman–Sacks paper constructs a minimal pair of α-recursively enumerable degrees for every non-refractory α.

Students of the fine structure of L may find Lerman's notion of tame Σ_2 projectum of interest (Section 2 of the fourth paper). Recursion theorists may see a use for the downward Skolem–Löwenheim argument in L. All four authors hope that this issue represents a happy compromise between some of the dominant ideas of recursion theory and set theory.

Gerald E. Sacks